

**To:** Way, Steven[way.steven@epa.gov]  
**Cc:** Griswold, Hays[Griswold.Hays@epa.gov]; Allen Sorenson[Allen.Sorenson@state.co.us]  
**From:** Goble, Michael  
**Sent:** Thur 8/27/2015 5:31:33 PM  
**Subject:** Re: Gold King Shotcrete Guidelines

The requirements look OK to me

On Thu, Aug 27, 2015 at 10:56 AM, Way, Steven <way.steven@epa.gov> wrote:

Please review these and provide any comments to Christoph, and please copy me.

Thank you  
Steve

Sent from my iPad

Begin forwarded message:

**From:** Christoph Goss <christoph.goss@deereault.com>  
**Date:** August 26, 2015 at 5:07:28 PM MDT  
**To:** "chassel@harrisonwestern.com" <chassel@harrisonwestern.com>  
**Cc:** Matt Francis <m.francis@erllc.com>, Steven Way <Way.Steven@epa.gov>  
**Subject:** Gold King Shotcrete Guidelines

Hi Chris

Here are the Gold King portal and adit shotcrete guidelines that we discussed. Let me know if you have any questions or concerns.

- ☐ Cement: ASTM C150 Type V. ASTM C150 Type II may be used if it meets the optional sulfate resistance requirement for Type V. This would require a mortar bar test per ASTM C452 and should be available from the cement supplier.
- ☐ Aggregate: ACI 506 Gradation 2 (3/8") meeting ASTM C33 requirements
- ☐ Clean, potable mixing water
- ☐ Chemical mixtures conforming to ASTM C-494 or C1141.

- Air entraining admixtures conforming to ASTM C- 260 or C1141 proportioned to provide an in-place air content of 4-6%
- Fly ash and pozzolanic materials conforming to ASTM C- 618 class F or C.
- Silica fume conforming to ASTM C-1240 at a rate of 10-15% of the mass of cementitious materials
- Macrosynthetic fibers ASTM C1116 Type III at 15-25lb/cy. No steel fibers
- No fibers in shotcrete layer with mesh
- Accelerator approved by shotcrete mix designer to be compatible with cement and all admixtures proposed.
- Minimum compressive strength 5000 psi

Christoph

**Christoph Goss, PhD, PE**

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